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CHAPTER 1

gmax — The Possibilities

In This Chapter

- Learning the history of gmax
- Understanding gmax's relationship to 3ds max
- gmax and the gaming community
- Pursuing a career in the gaming industry
- Introducing the gmax game packs
- Understanding the limitations of gmax

Do you remember the first time you played an arcade game? How about the first time you played a computer game at home? Do you remember the first adventure or scenario-based game that you finished? How about the first one you finished without cheating? Do you remember the first game that you completed with all settings on the most difficult level? Do you remember the first time that you stopped playing a game because no more levels were available? Do you remember your joy of finding some additional levels online? Have you ever thought of creating your own mod or levels?

If you've answered yes to most of these questions, then you truly are a gamer at heart. If you've answered yes to the last question, then you're about to embark on an interesting journey.

gmax is a complex piece of software that makes creating custom game content and levels possible. Throughout the chapters that follow, you'll learn to use the exact tool that the game developers use to create their games. Building game mods isn't for the faint at heart (as the thickness of this book would indicate). It takes patience and skill, a little bit of study, and a lot of practice, but the end result can be very rewarding. There is nothing like challenging other players to a deathmatch on a level you designed and built yourself. Talk about home field advantage.

Before we dive into the details on gmax, this chapter gives you a high-altitude view of gmax and its games. From this viewpoint, you'll be able to see how gmax fits into the gaming industry and what options lie ahead of you as a gamer and a game developer.

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Learning the History of gmax

At the Game Developer's Conference (GDC) in 2001, Discreet dropped an announcement on the gaming community that had generally had one of two different effects on the listeners. Attendees were either rendered immobile from shock or set into a frenzy of giddy excitement. Essentially, the announcement was that Discreet was going to make an optimized version of 3ds max for gamers, and they were going to give it away for free. At the time, this was an amazing bit of news, because 3ds max sold for around $2,500 to $3,000.

The excitement for gamers was significant because 3ds max is the software package that most game companies use to create their games, and now game content creators can use the same tool that the game companies use.

Once gmax appeared as a free download on the Discreet site, the number of downloads began to take off and entire Web sites sprang up overnight devoted to gmax and custom game content. Today the total number of downloads of gmax is over a half million. That's a lot of game content creators.

Understanding the Relationship Between gmax and 3ds max

To understand gmax, you first need to understand where it came from. gmax is based on 3ds max, version 4, which just happens to be the best selling 3d modeling, animation, and rendering package available. Combined with Character Studio, it's the product of choice for most gaming companies.



Even though 3ds max 5 is currently available, most of the functions found in gmax are the same as those found in 3ds max 4. Version 5 includes many high-end enhancements that wouldn't be included in gmax anyway. Over time, some of these improvements will find their way to gmax.

gmax actually comes in two flavors — regular and extra crunchy. The normal gmax version is available for free from Discreet (or you can get it off the CD-ROM that came with this book). Discreet also has a development version of gmax available, affectionately called gmax dev. This later version enables game companies to create game packs that ship with their games. If you're looking to get your hands on gmax dev, then be warned that it is very expensive (unless you own a game company), but for most users, gmax is more than enough.



The latest version of gmax at the time of publishing, version 1.2, is included on the book's CD-ROM.

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gmax and the Gaming Industry

With gmax, the gaming companies have a way to give their game legs. The term "legs" is used to define the length of time that the game remains on the shelves. For these companies, the longer the game stays on the shelf, the more money it makes. (Come to think of it, book publishing works the same way.)

Have you ever played a game and ripped through all the levels in a matter a days and then felt jipped because it held your interest for only two weekends? Thank heavens for mod builders who enabled gamers to create new and devious levels, many of which were much better than the levels shipped with the game.

gmax lets mod creators use the same tool that was used to create the game in the first place, along with all the customization needed to output the content to the format that the game uses.

So the game companies get a game that stays around longer, the game hobbyists get an advanced mod builder, and the normal gamer gets more levels than he or she can shake a joystick at. It's a win-win-win situation.

Pursuing a Career in the Gaming Industry

If you speak of the gaming industry in Las Vegas, they will immediately think of gambling games, but because you're reading this book (even if you live in Las Vegas), I assume that you aren't interested in the odds of winning for a royal flush. I frequently tempt my young son with a career in the gaming industry. I ask him, "How would it be to play games for a living or even better, to make games for a living?" His answer is always the same: "Ooh, yeah!"

If you're anything like my son, then you were probably one of the first to download gmax and probably know more tricks than anyone on your block for beating games. If you're considering getting a job in the gaming industry, then learning gmax (and 3ds max) is a good start.



Another good feather to have in your 3d cap is getting experience with the 3d program called Maya. Alias/Wavefront has recently made a learning edition of Maya available for free. You may want to check this tool out also. You can find details on the Maya Personal Learning Edition at `www.aliaswavefront.com`.

Many positions are open to game developers. You can become a modeler, an animator, or an effects specialist. One of the nice things about using gmax is that you get experience in all these areas. As you work with gmax to create a custom gaming level, pay attention to which area of development you most look forward to.

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When you begin interviewing with game companies, you're going to need a portfolio of your work, so as you build levels, be sure to save images of your best work to show off later. Chances are the interviewer will not fire up Quake to see your custom level, but they will take time to look at your images. You can always take screenshots of your game in progress using the Print Screen key on your keyboard.

Another avenue that leads to the game industry is to choose one of the many schools that offer degrees in game development. You can find a good list of schools that will prepare you for the gaming industry at `www.gamedev.net`.

Every year there are several conferences and events that bring the gaming industry together. Attending these conferences gives you some valuable exposure to the industry. For games, the big one to attend is the E3 Expo. This conference takes place in the spring and is the place where all the new games are announced. Another good conference that is more technical is the Game Developer's Conference (GDC). For computer graphics as a whole, the place to be is Siggraph. You can usually volunteer as a student to get into conferences free of charge.

You can find out about these conferences online. E3 Expo is at `www.e3expo.com`, GDC info can be found at `www.gdconf.com`, and Siggraph info is at `www.siggraph.org`.

gmax Enabled Games

Just because gmax is out there and available doesn't mean you'll be able to use it with all the games that you want. Discreet is making money on gmax by licensing its use to the game companies. These game companies need to pay Discreet for the right to tie their game into gmax, so the list of games that you can use gmax on is short, but growing.

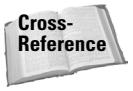
As part of licensing the right to use gmax, the game companies can develop their own interface pieces that work within gmax; these pieces are called game packs. These game packs enable the stuff you create in gmax to be loaded and used within the game.

Quake III Arena

When Quake was initially released by Id Software, it shook up the gaming market and single-handedly defined the first-person shooter genre. As Discreet was looking for a game to use to prototype gmax, Quake, which was up to version III by then, was a natural fit.

The Discreet engineers created a Quake game pack for gmax by pushing and poking all the functionality of gmax. The result was called Tempest, shown in Figure 1-1, and it was released alongside gmax as a proof-of-concept.

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You can find all the excruciating details on the Tempest game pack in Chapter 23, "Making Worlds with Tempest for Quake III Arena."

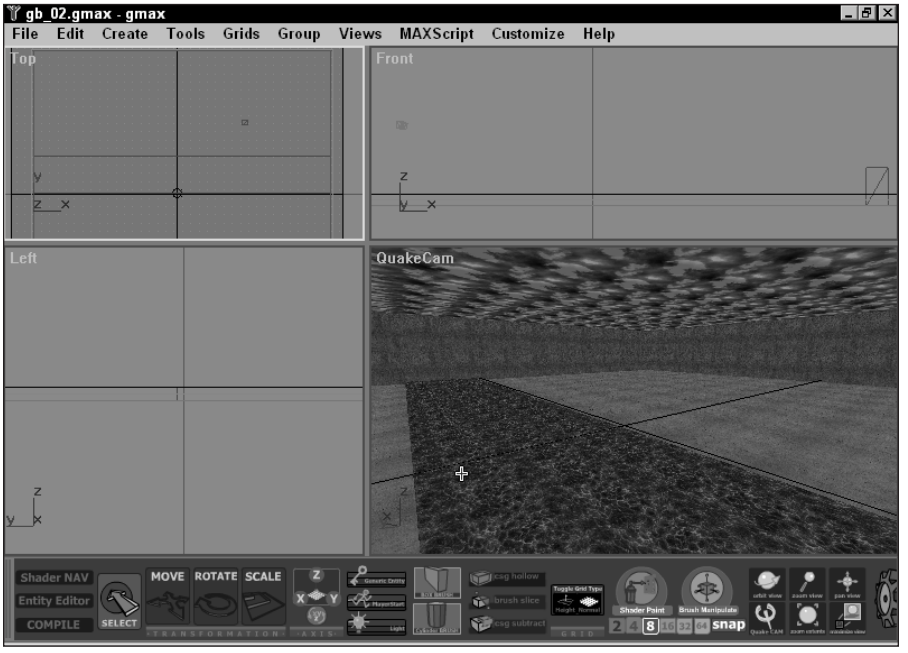


Figure 1-1: Tempest has its own toolbar full of commands that are unique to building Quake levels.

The Tempest game pack is still available for download at the Discreet site, `www.discreet.com/products/gmax`.

If you look closely at Tempest, you'll see the rough edges. Many Quake content creators use other tools to create their nightmares, but Tempest is still extremely useful as a first look at gmax and provides a quick and easy way to get your feet wet.

Flight Simulator 2002 Professional Edition

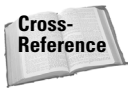
When Microsoft released Flight Simulator 2002 Professional, it was heralded in the burgeoning gmax community as the first gmax-compatible game. Flight Simulator users were excited about the possibilities that gmax offered, but many of them ran into a steep learning curve that sent them running back to their standby content creation tools.

In the Flight Simulator arsenal of tools, gmax is just one of many unique SDKs that enable customization. The integration with gmax consisted simply of an export feature that converted the gmax file into a format that Flight Simulator could use.

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The Flight Simulator game pack didn't push gmax as far as Tempest did, but it was a good, important first step. Over time, Flight Simulator content creators have accepted and used gmax happily.

Figure 1-2 shows an aircraft being updated in gmax for Flight Simulator.



Details on using the Flight Simulator game pack can be found in Chapter 24, "Creating Custom Content for Flight Simulator 2002."

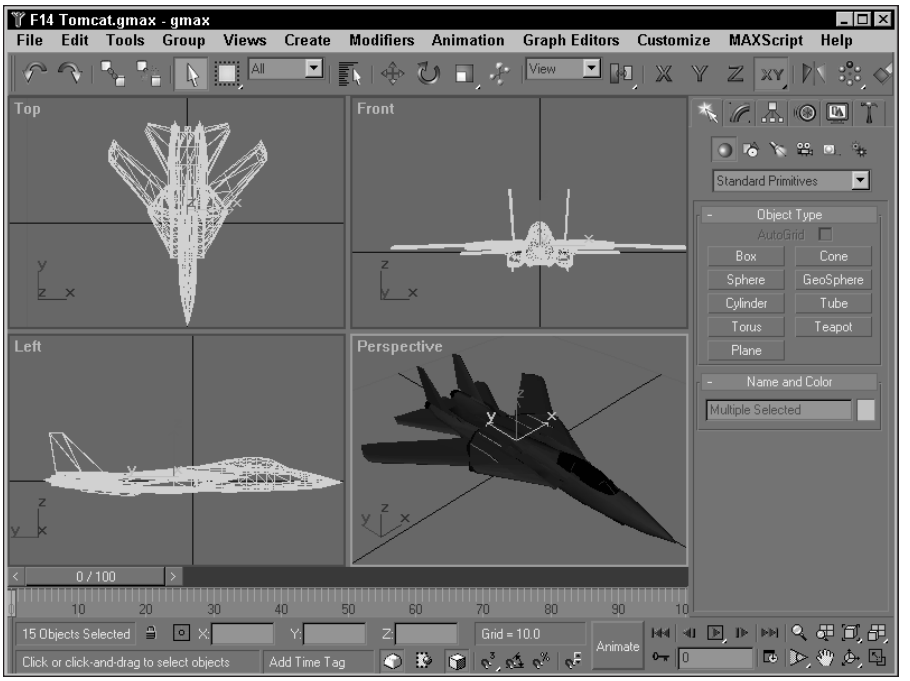


Figure 1-2: The Flight Simulator game pack offers minimal changes to the gmax interface.

Trainz

As Flight Simulator was making its big splash in the gmax market, another simulation game with a dedicated group of users appeared with a fairly robust implementation that relied on gmax. Trainz, created by Auran, is a simulator for trains.

With all the appropriate tools in place, the learning curve was manageable. Trainz users now boast one of the largest online repositories of gmax custom content available.

Figure 1-3 shows a sample engine created in gmax by Jean-Luc Benard.

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For details on using the Flight Simulator game pack, turn to Chapter 26, "Creating New Scenery for Trainz."

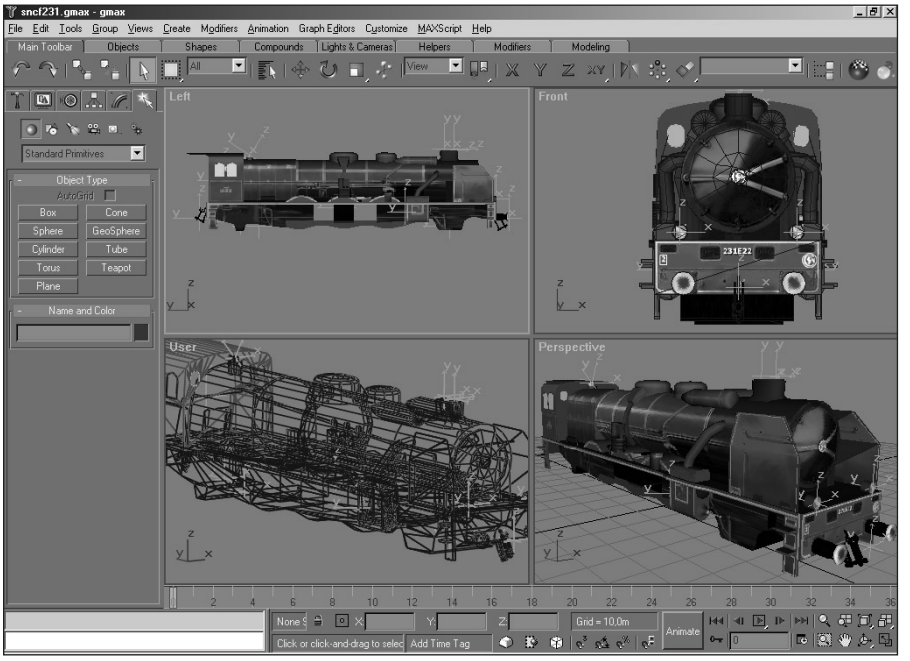


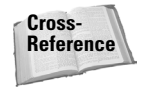
Figure 1-3: The Trainz game pack changes the gmax interface slightly and adds some exporting features.

Dungeon Siege

After Flight Simulator, Microsoft released a game created by Gas Powered Games that relied heavily on gmax and allowed users to customize every aspect of the game to create their own adventures. The game was Dungeon Siege and gmax has made possible the creation of Siegelets that number in the hundreds.

The Dungeon Siege game pack is called Siege Max. Alongside a separate Siege Editor, it forms part of the Dungeon Siege Tool Kit. With these tools, you can create all the objects needed to populate the world of your adventure.

Figure 1-4 shows an image of a Sand Golem character created by Team Elemental, a group assembled to create a unique Dungeon Siege adventure.



The various tools included in the Dungeon Siege Tool Kit are discussed in Chapter 25, "Creating Adventures with Dungeon Siege."

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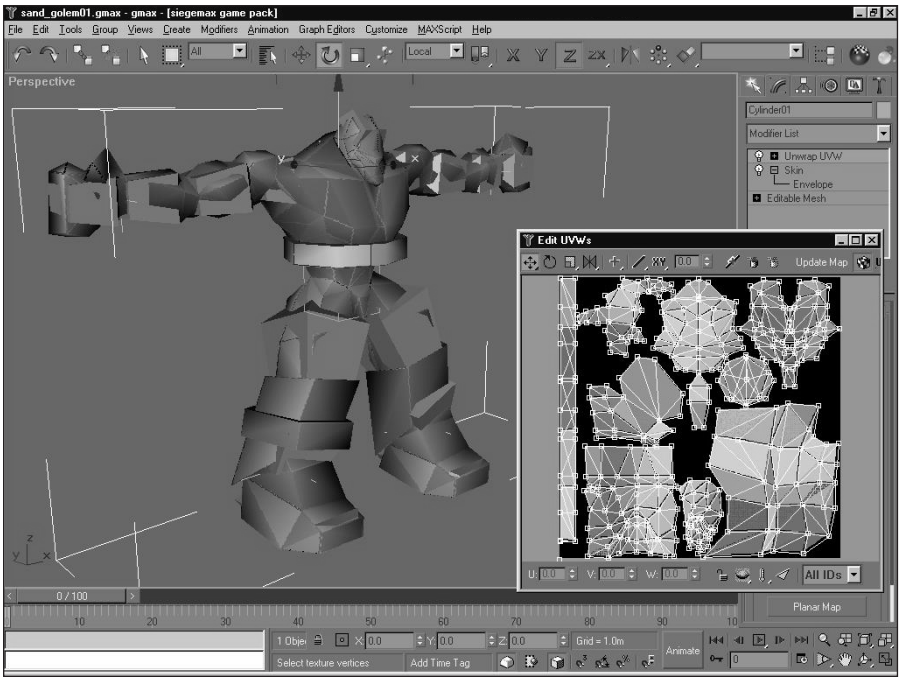


Figure 1-4: The Dungeon Siege game pack includes many interface enhancements that prepare objects and characters to interact with other characters within the game.

Command & Conquer: Renegade

Westwood Studios decided to create a gmax game pack for their Command & Conquer: Renegade release. This game takes the hugely popular Command & Conquer game concept and adds a first-person shooter element.

The resulting game pack, named RenX, overhauled many aspects of gmax and added lots of new functionality that made it easy to produce objects, weapons, vehicles, and characters for the Renegade game.

Combat Flight Simulator 3

Following on the success of Flight Simulator, Microsoft developed a gmax game pack for Combat Flight Simulator. This game's integration takes a step beyond its predecessor. The Combat Flight Simulator 3 game pack can export to the CFS .M3D file format. Figure 1-5 shows a sample plane in the Combat Flight Simulator game pack.



Combat Flight Simulator is similar to Flight Simulator, which is covered in Chapter 24, "Creating Custom Content for Flight Simulator 2002."

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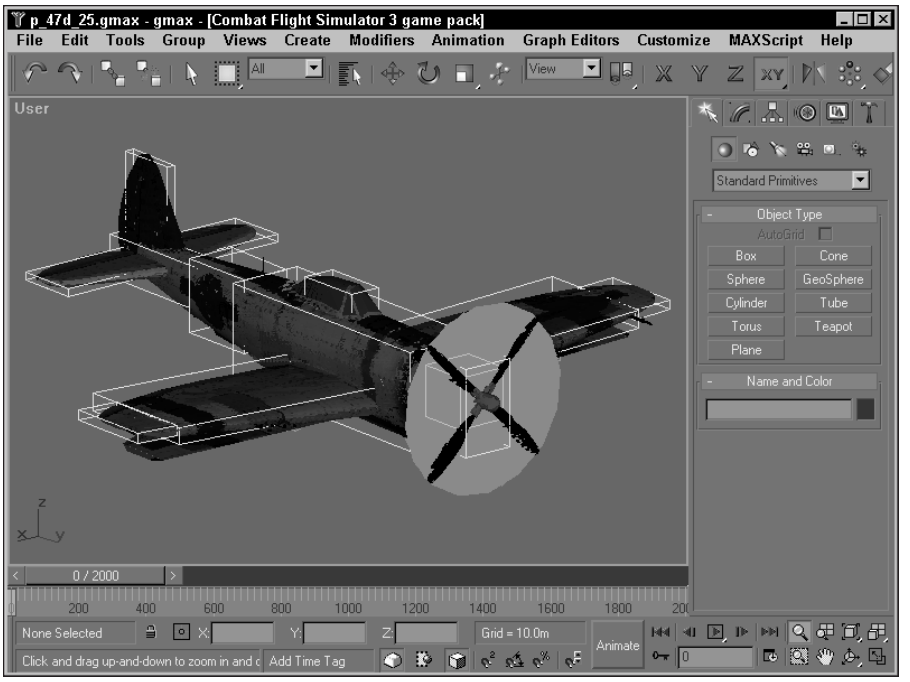


Figure 1-5: The Combat Flight Simulator game pack is similar in most respects to the Flight Simulator game pack.

Train Simulator

Answering the call of Trainz, Microsoft released its Train Simulator game. Train Simulator, like Flight Simulator, enables you to export gmax models into a format the game engine can use, as shown in Figure 1-6.



Because of the extensive coverage of Trainz, this book does not cover Train Simulator, but the Train Simulator game pack is different from Trainz and is fairly similar to Flight Simulator.

And more to come

In addition to these games, several more games have been announced to appear during 2003 with gmax support, including the following:

- ✦ Microsoft's Impossible Creatures
- ✦ Microid's Tennis Master Series
- ✦ Unreal Tournament 2003

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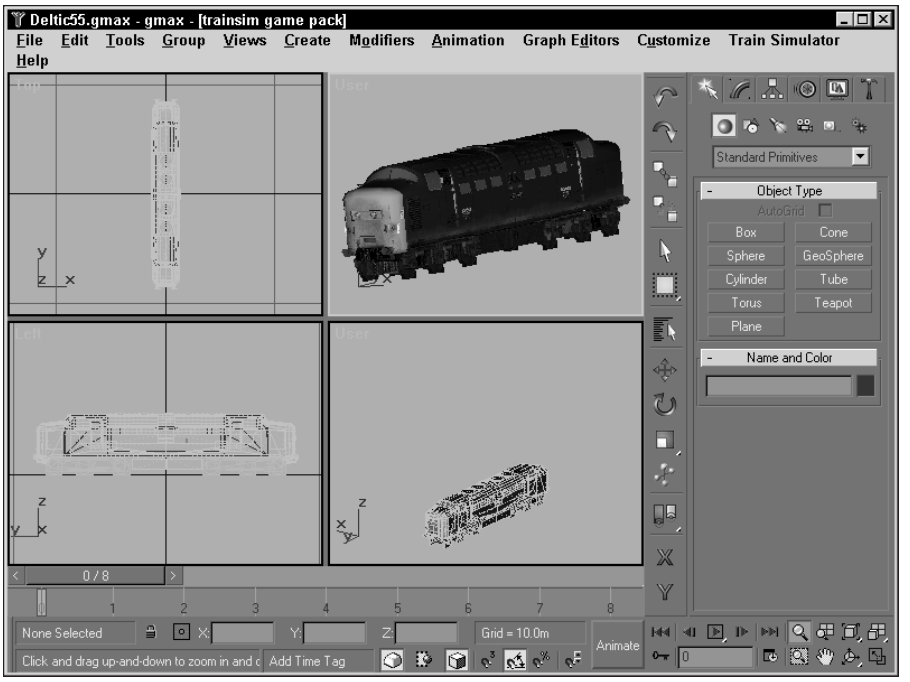


Figure 1-6: The Train Simulator game pack is also very similar to the Flight Simulator game pack.



Discreet keeps a list on its Web site of games that users have voted to provide with gmax support. If your favorite games aren't on the list, you can make your voice heard at the Discreet site.

Understanding the Limitations of gmax

Nobody likes to hear that software has limitations, and you may be screaming, "Hey, don't tell me what I don't have." But gmax may be just the starting point to a lifetime of work with 3ds max, and knowing where one ends and the other begins can help you in the long run. Also, by knowing the limits of gmax, you won't be spinning your wheels looking for a feature that isn't there.

Now that you're armed with a lame excuse, I'll give you the real excuse. Much of the features left out of gmax were excluded on purpose because games don't need them. For example, gmax doesn't include a way to render your scenes because the game engine has an optimized renderer built into it. The main purpose of gmax is to build and animate additional content for games, and almost all the modeling and animation features remain. See, someone is watching out for you.

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Modeling limitations — the stuff you don't need

With all the various modeling features, you probably won't even miss these few limitations. These few limitations can be addressed easily using the available modeling types.

gmax has no Pyramid primitive object. Why is the pyramid missing? It probably has something to do with the power of pyramids, and such an object is just too dangerous in the hands of gamers. All the Extended primitives are also missing including equally dangerous objects such as the Hedras and the Torus Knots. (But they left the teapot for you, so what else do you need?)

For 2D drawing tools, the Section spline tool is missing.

NURBS modeling is also removed. NURBS is an acronym that stands for Non-Uniform Rational B-Splines. You can think of a NURBS object as a model that is made from a net and at each intersecting point is a handle that you can grab onto to push or pull the net. Using these control points, you can change the surface of the model. In some ways, working with NURBS is like modeling with clay.

NURBS are very useful for modeling organic objects like flowers and cloth. I guess Discreet assumes that we don't need any of these objects in our games. NURBS objects usually don't work in real-time games because they take longer to render.

3ds gmax has many other objects that it groups together as compound objects. These include Loft, Boolean, ShapeMerge, Morph, Connect, Conform, Scatter, Terrain, and Mesher objects. gmax includes only the first five of these. The latter four (Conform, Scatter, Terrain, and Mesher) can yield very large objects that wouldn't work well in games.

Animation limitations

Although 3ds gmax includes several different Inverse Kinematics solvers, only the Interactive and Applied IK methods and the IK Limb Solver is included in gmax. The HI IK Solver and the HD IK Solvers are missing. These solvers enable Hierarchy Independent and Hierarchy Dependent IK solutions.

Also missing in gmax is the Dynamics module that enables users to animate using defined physical properties like gravity, friction, etc.

Material Editor limitations

The Material Editor has been redesigned for gmax and it looks quite a bit different than the Material Editor found in 3ds max. Of all the various material and map types, only Standard and Multi-Material materials are available in gmax. For maps, you'll have to make do with the Bitmap and Checker map types. All other procedural materials and maps are gone, but you can simulate any of these other types using a Bitmap map, so Discreet left the one that counts.

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Several complex materials have also been removed, including most of the Shaders, Reflection Mapping, Raytrace Materials, and Displacement Mapping. These materials are used to produce detailed looks that take a long time to render and would slow down your game. (You wouldn't want that, would you?)

Most of the material modifiers are absent, but the mapping modifiers of UVW Map, UVW Xform, and UVW Unwrap are still available. So gmax includes all that you need to work with and manipulate maps.

Effects limitations

gmax can't do Atmospheric effects like fog or Environment Mapping. Again, the reason is probably because these effects would take too long to render effectively. gmax allows backgrounds, but you can't animate them.

3ds max also includes Particle Systems and Space Warps, which sound like B-grade science fiction movies, but they let you create special effects by controlling the movement of thousands of tiny particles. A Space Warp is a tool used to create forces within a scene such as wind, torque, gravity, etc.

No rendering or compositing

There are no rendering limitations in gmax because there are no rendering features at all. Because the game engine is used to render the objects, rendering objects in gmax isn't necessary. gmax does include a flat shade renderer that is used within the viewport. This renderer can render objects as wireframes, smooth, or smooth with highlights. For the work you'll be doing, this is sufficient.

The Video Post interface is also missing. In 3ds max, this interface lets you combine different animation sequences and edit them in different ways.

Other limitations

3ds gmax includes a Sunlight system, which can simulate the effect of sunlight at any time during the year in any part of the world. This is missing in gmax.

The Camera Tracker and Camera Match utilities are missing in gmax. These utilities let you match a camera to a section of video or to an image. The Motion Capture controllers are also missing.

The Schematic View is also missing in gmax. This view displays all objects as nodes (small boxes) and includes all the links, groups, and instances of an object in a single view. It's good for getting a macro look at your scene and can even be used to move and define relationships between objects.

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Summary

Understanding what gmax is and what it can and can't do is crucial as you begin to build game levels. With this understanding, you are ready to move to the next level.

This chapter covered the following topics:

- ✦ The history of gmax
- ✦ gmax-enabled games
- ✦ gmax limitations

Hey, this gmax thing sounds pretty cool, so let's look at it. The next chapter presents and (more importantly) explains the gmax user interface.

✦ ✦ ✦

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